

REMARKS

Claims 1, 2, 7, 8, and 12-26 remain pending in this application, with claims 1 and 13 being independent. Claim 1 has been amended. Claim 6 has been canceled without prejudice or disclaimer of subject matter.

Applicants note with appreciation the indication that claims 6, 18, 20, 22, and 24 would be allowable if rewritten so as not to depend from a rejected claim, and with no change in scope. Since the allowable subject matter of claim 6 has been incorporated into claim 1, claim 1 is now believed to be in condition for allowance.

Claims 1, 7, 8, and 12-17 were rejected under 35 U.S.C. § 103(a) as being obvious from U.S. Patent Application Publication No. US 2005/0116476 to Feddersen (hereinafter "Feddersen '476") in view of U.S. Patent No. 7,015,595 to Feddersen et al. (hereinafter "Feddersen '595") and further in view of U.S. Patent No. 3,894,274 to Rosenberry, Jr (hereinafter "Rosenberry"); and claims 2, 19, 21, 23, 25, and 26, as being obvious from Feddersen '476, Feddersen '595, and Rosenberry, and further in view of U.S. Patent No. 6,226,166 to Gumley.

As an initial matter, Applicants note that the primary reference, Feddersen '476, does not qualify as prior art for the reasons explained below, and therefore that all of the rejections set forth above are improper. A new Action is requested, which should be made non-final if it is not a Notice of Allowance.

Specifically, 35 U.S.C. § 102(e) provides that:

A person shall be entitled to a patent unless... (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language... (Emphasis added.)

Feddersen '476 is a National Stage Entry, under 35 U.S.C. § 371, of International Application No. PCT/DE03/00172. However, International Application No. PCT/DE03/00172 was published in the German language, and not in the English language. Accordingly, Feddersen '476 does not qualify as prior art. For these reasons, a Notice of Allowance is requested, or, at least, a new, proper Action that is non-final.

While the rejections set forth in the outstanding Office Action are improper for the reasons set forth above, Applicants will nevertheless comment on the rejections in order that the Examiner may consider the Applicants' comments in determining whether to make out further rejections of the claims.

Applicants take note that, following the Appeal Brief filed on August 1, 2008, the Examiner has now entered a new ground of rejection against the claims; in particular, newly cited references Rosenberry and Gumley have been applied against the claims, as outlined above.

First, as noted above, claim 1 is now believed to be in condition for allowance.

Applicants submit that independent claim 13, together with the claims dependent therefrom, are patentably distinct from the cited references for at least the following reasons.

In the Appeal Brief, the general nature of the claimed invention was discussed at length, and Applicants will not repeat that entire discussion here.

Claim 13 is directed to a method for protecting the converter in a power generation system comprising a double-fed induction generator (DFIG) comprising a rotor (1) having rotor windings, a stator (2) having stator windings connected to a grid for electric power distribution and a control system comprising a converter (170, 171). The converter comprises a rotor-inverter (71-73) connected to the rotor windings of the generator, a grid-inverter (74-76) connected to the grid and/or to the stator windings, and a DC-link (77) for feeding the rotor-inverter.

The method includes the step of connecting a clamping unit (190) having a clamping element over the rotor windings, the clamping unit comprising a clamping element (290) arranged so that when the clamping unit is in a non-operating state, currents in the rotor windings cannot pass through said clamping element, and when the clamping unit is in an operating state, currents in the rotor windings can pass through said clamping element. The clamping element comprises at least one passive voltage-dependent resistor element (291, 292, 293, 294) for providing a clamping voltage over the rotor windings. The method also includes the step of triggering the clamping unit from its non-operating state to its operating state when an over-current is detected in the rotor windings.

Notably, in claim 13, the clamping unit includes a clamping element that comprises at least one passive voltage-dependent resistor element for providing a clamping voltage over the rotor windings. An example of the clamping element is shown generically as 290 in, e.g., Fig. 5 of the present application. In the option in which multiple such passive voltage-dependent resistor elements are used, they are shown in Fig. 7 of the present application as

291, 292, 293, and 294. (See also page 8, lines 17-18 of the present application, for example.)¹

By virtue of the features of claim 13, the converter can start to operate again by bringing the clamping unit back into its non-operating state, so that the converter can take over control of the generator again as soon as possible (see, e.g., page 8, lines 29-33 of the present application). Accordingly, the need to disconnect the generator from the grid and then reconnect the generator to the grid can be avoided, along with consequent down time, as had been required previously. As explained, for example, at page 6, lines 32-35 of the present application, avoidance of down time on wind-powered electrical generators is becoming more important as reliance on this type of power increases.

Feddersen '476 relates to a circuit to be used in a wind power plant comprising a double fed asynchronous generator, a crowbar, an “additional resistor” R15 (see Fig 1 and 3), and a converter. (See, e.g., the abstract of Feddersen '476.)

Feddersen '595 relates to a variable speed wind turbine having a passive grid side rectifier using “scalar power control,” which, according to that patent, provides more precise control of electrical quantities on the power grid (see pag. 1, lines 8-11 of the patent).

First, it is submitted that nothing has been found, or pointed out, in Feddersen '476 or Feddersen '595, whether considered separately or in any permissible combination (if any) that would teach or suggest a clamping unit including a clamping element that comprises at least one passive voltage-dependent resistor element for providing a clamping voltage over the rotor windings, as recited in claim 13.

¹It is of course to be understood that the references to various portions of the present application are by way of illustration and example only, and that the claims are not limited by the details shown in the portions referred to.

Feddersen '476 intends to protect the converter in the event of a short-circuit in the grid by using a crowbar or by using a controllable load resistor (see paragraph 0007). However, a crowbar is the precise means described in the present application as prior art and, as described in the present application, effects a disconnection from the grid that delays bringing the generator back on stream when the current overload caused by the short circuit is passed. With regard to the controllable load resistor R15, it is merely a linear resistor and is not voltage-dependent; it is not a passive voltage-dependent resistor as recited in claim 13. In addition, Feddersen '476 states that such load resistor (if used) is “controlled by a switch which, in particular, can be actively switched off and is, in particular, not a naturally commutated thyristor” (see paragraph 0007). Thus, the voltage control in Feddersen '476 is made by the actuation of the switch on the external resistor, whereas in the claimed invention the voltage is fixed indirectly by the connection of the at least one passive voltage-dependent resistor element.

On the other hand, the Examiner remarks, at page 3 of the Office Action, that Feddersen '476 discloses “that the resistance element can be connected in parallel (paragraph 0008) and that more than one resistor can be used (paragraph 0027)...” It is respectfully pointed out that paragraph 0008 does not say this because the only use of the word “parallel” in that paragraph is in pointing out that the modification discussed in that paragraph permits sharing between switches:

This means that the high rotor short-circuit current, which is frequently more than 1000A, can be shared between a number of switches, since these switches which can be switched off would have to be connected in parallel in a highly complex manner for the total current. (Emphasis added.)

The use (in paragraph 0027) of “two or more resistors, which can be connected and disconnected individually” is not a teaching to use multiple passive voltage-dependent resistor elements in parallel in the clamping element.

... [R]ejections on obviousness cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. MPEP 2141.III, quoting *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, 82 USPQ2d 1385, 1396 (2007).

The Examiner concedes, at page 3 of the Office Action, that Feddersen '476 “does not disclose explicitly having an over voltage protection/detection device,” and states that in Feddersen '595 “there is a protection device when there is a DC over voltage condition”.

Related to this, Feddersen '595 uses an “over voltage protection (OVP) circuit 160” for which no details are given, certainly not any description of a passive voltage-dependent resistor.

Combining these references, Feddersen '476 and Feddersen '595, therefore can in no way lead to the claimed application as set out in independent claim 13, as there is no mention anywhere in either reference of the above-described notable feature of the claim, and so it is stated by the Examiner in the Office Action where it is conceded that “neither Feddersen [476] nor Feddersen et al [595] disclose using voltage dependent resistors.” (Page 3 of the Office Action). The Office Action goes on to cite Rosenberry to supply what is missing from the first two cited references.

Rosenberry discusses the well known use of varistors for preventing undesirable voltage peaks. Applicants describe at page 10, lines 6-14 of the present application different passive voltage-dependent resistors that could be used in the clamping unit claimed. Therefore, what Applicant is claiming is not the use of a varistor as a clamping unit but the

use of a clamping unit that comprises at least one passive voltage-dependent resistor element which can be one of the ones described at page 10, not just a varistor. Nevertheless, the circuit disclosed by Rosenberry has a totally different arrangement than the one disclosed in the claimed invention (see, for example, Fig. 1 of Rosenberry and Fig. 7 of the present application), since their function and application are totally different.

Rosenberry describes a circuit for protecting the insulation of an electric device, which has a relatively low voltage class of insulation on the conductors or windings, from undesirable voltage peaks. This circuit is directly connected in the grid. Claim 13 recites a clamping unit connected to the rotor windings and a converter that protects the converter components from overcurrents or overvoltages produced by a short-circuit in the grid. Therefore, it would not have been obvious for a person having ordinary skill in the art to reach to the claimed invention in view of Feddersen '476, Feddersen '595, and Rosenberry, and thus claim 13 is seen to be clearly allowable over the cited references.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

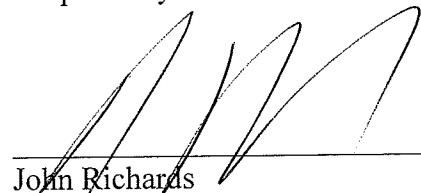
For example, regarding claims 2, 19, 21, 23, 25 and 26, which are rejected as being obvious from Feddersen '476, Feddersen '595, and Rosenberry, and further in view of Gumley, Applicants respectfully disagree. First, as explained above, the combination of Feddersen '476, Feddersen '595, and Rosenberry, even assuming such a combination would be permissible, would not obtain the invention as claimed in the independent claims. Second,

regarding what the Examiner states at page 4 of the Office Action about the disclosure of Gumley, where it is said that “for the purpose of providing an efficient overvoltage protection for electrical equipment against transients on power lines that it is known in the art to have a plurality of variable resistors 14, 24, 44 connected in parallel”, Applicants respectfully disagree since what is being claimed is not the use of multiple varistors in parallel but the use of a clamping unit that comprises a plurality of passive voltage-dependent resistor elements in which that element is one of a varistor, zener diode, or one suppression diode, not just a varistor.

Thus, Applicants submit that it would not have been obvious for a person having ordinary skill in the art to reach the claimed invention in view of Feddersen ‘476, Feddersen ‘595, and Rosenberry, and further in view of Gumley. Accordingly, Applicants submit that claims 2, 19, 21, 23, 25, and 26 are clearly allowable over the cited references.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Respectfully Submitted



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